

GEORGIA INSTITUTE OF TECHNOLOGY  
OFFICE OF CONTRACT ADMINISTRATION  
SPONSORED PROJECT INITIATION

Date: 7/18/79

Project Title: Georgia Heart Association Investigatorship

Project No: E-23-647

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Project Director: Dr. Hyland Yu-Liang Chen

Sponsor: Georgia Heart Association, Inc.

Agreement Period: From 7/1/79 Until 6/30/80 (Grant Period)

Type Agreement: Grant -- Letter dated 7/10/79, w/check no. 3708, dated 7/10/79

Amount: \$10,000 (partially funded at \$5,000 through 12/31/79)

Reports Required: Annual Progress Report

Sponsor Contact Person (s):

Technical Matters

Contractual Matters

(thru OCA)

Dr. Nanette K. Wenger  
President

M. Linwood Beck  
Executive Director  
Georgia Heart Association, Inc.  
Broadview Plaza, Level "C"  
2581 Piedmont Rd., N.E.  
Atlanta, Georgia 30324  
(404) 261-2260

NOTE: CONTINUATION OF E-23-639

Defense Priority Rating: N/A

Assigned to: Engineering Science and Mechanics (School/Laboratory)

COPIES TO:

Project Director  
Division Chief (EES)  
School/Laboratory Director  
Dean/Director--EES  
Accounting Office  
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✓ Reports Coordinator (OCA) *Reddy*

Library, Technical Reports Section  
EES Information Office  
EES Reports & Procedures  
Project File (OCA)  
Project Code (GTRI)  
Other \_\_\_\_\_

GEORGIA INSTITUTE OF TECHNOLOGY  
OFFICE OF CONTRACT ADMINISTRATION  
SPONSORED PROJECT TERMINATION

Date: 6/4/81

Project Title: Georgia Heart Association Investigatorship

Project No: E-23-647

Project Director: Dr. Hyland Yu-Liang Chen

Sponsor: Georgia Heart Association

Effective Termination Date: 6/30/80

Clearance of Accounting Charges: 6/30/80

Grant/Contract Closeout Actions Remaining:

- ☐ Final Invoice and Closing Documents
- ☒ Final Fiscal Report
- ☒ Final Report of Inventions
- ☐ Govt. Property Inventory & Related Certificate
- ☐ Classified Material Certificate
- ☐ Other \_\_\_\_\_

Continuation of E-23-639

Assigned to: ESM (School/Laboratory)

COPIES TO:

Administrative Coordinator  
Research Property Management  
Accounting Office  
Procurement Office/EES Supply Services  
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Reports Coordinator (OCA)  
Suspense

Legal Services (OCA)  
Library, Technical Reports  
EES Research Public Relations (2)  
Project File (OCA)  
Other: \_\_\_\_\_

Terminal Report  
Investigatorship of GHA  
H. Y. L. Chen, Ph.D.

I. Investigator/Chair

Date of Support 7-1-79 to 6-30-80

II. Major Research Projects

1. Biorheology of Tracheal Smooth Muscle in the Passive State.

The passive length-tension relationship most often reported in the smooth muscle literature represents the steady state condition. In this work the short-term, viscoelastic response of Canine Tracheal smooth muscle in the passive state was studied. A multi-microprocessor controlled and monitored one dimensional testing device was used to perform mechanical tests on the tissue in vitro. Force relaxation at constant length and response to cyclic elongation were studied. The tissue was found to behave as a viscoelastic solid.

The viscous properties are prominent in that the tension after an elongation relaxes by as much as 95% of the initial tension, reaching a constant value within 150 seconds.

The stress vs. stretch ratio relationship is nonlinear exhibiting hysteresis and strain rate dependence.

Since reduced temperatures are sometimes used in smooth muscle research to render the specimen more manageable. The effects of temperature on the mechanical properties in the passive state were studied. The stiffness of the tissue was found to decrease by 54%, plus or minus 8%, with a decrease of in temperature from 37 C to 27 C.

2. Others

- a. Optic probe for the viability of Myocardium. (Pat. Pending)
- b. The large deformation of Elastic-plastic Material.
- c. Method for Extension at high speeds based upon Topological

Design of Flows Fields. (Pat. Pending)

- d. Special Theory of Finitely Deformed Axially Symmetrical Membrane and its Rheological Applicants
- e. Pelvic Relaxation, viewed in mechanics.
- f. Tensile Fatigue of Polymeric Fibers.

III. 1. On the Work of TSM

It's the beginning stage of the mechanical studies of smooth muscle. It might find some application in phamacology.

- 2. a. It shall have some clinical applicant

IV. Inventor's Report on the Optic Probe

V. A Thesis, "Biorheology of Tracheal Smooth Muscle in the Passive State.